SITE ASSESSMENT

FOR

WAUKEGAN TAR PIT
WAUKEGAN, ILLINOIS

Prepared for:

U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, Illinois

CONTRACT NO. 68-01-7367

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Prepared by:

WESTON-MAJOR PROGRAMS DIVISION
Technical Assistance Team
Region V

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1.0 SITE DESCRIPTION

The Waukegan Tar Pit (Tar Pit) site is a small depression in a wetland area located in Waukegan, Lake County, Illinois, north of Waukegan Harbor (Figure 1). The site encompasses approximately half an acre and is bordered by Pershing Road and a residential area to the west of the site (Figure 2). A larger wetland area is located immediately north of the site, in Illinois Beach State Park, north of Dahringer Road. The North Shore Sanitary District facility and Lake Michigan are located east of the site. Lake Michigan is used for recreational purposes in the vicinity of the site. Drinking water intakes are located more than one mile offshore, beyond the static water body.

Site topography is predominately flat, with a slight depression where the tar pit is located. Surface runoff from the site flows southeast toward several factories and Lake Michigan.

2.0 SITE BACKGROUND

The Tar Pit property was sold to Elgin, Joliet and Eastern Railway (E, J & E) in 1918. North Shore Gas Company (NSGC) purchased a parcel of property adjacent to the Tar Pit in 1911. NSGC operated a coal-to-natural gas conversion plant on this property until the company sold the parcel of property to E, J & E in 1925. Both properties were sold to North Shore Sanitary District, the current owner, in 1983. According to a Waukegan Fire Department fire incident report a tar fire broke out on July 7, 1988. Recently, birds and animals have become trapped in the Tar Pit. The Technical Assistance Team (TAT) was tasked to conduct a site investigation after the U.S. Environmental Protection Agency (U.S. EPA) was contacted about problems concerning the Tar Pit.

3.0 SITE INVESTIGATION

On September 6, 1990, TAT members Jim Papp, Kit Noller, and Michael Piro accompanied U.S. EPA On-Scene Coordinator (OSC) Maureen O'Mara and Remedial Project Manager (RPM) Cindy Nolan on a site investigation at the Tar Pit site.

Air monitoring was performed around the tar pit with a photoionization detector (HNu) and a radiation meter. No readings above background were detected in ambient air.

While surveying the area, the TAT observed a small tar pit, covered with water, about 125 feet long, and 60 feet wide. Access to the tar pit was unrestricted. Large sewer pipes were observed along the western shoreline of the tar pit. Several oil seeps were observed to the north, east, and south of the tar pit. When the TAT probed the sediment below the water surface in the tar pit, a tarry substance was observed oozing from the bottom. A burnt telephone pole was observed on the south shore of the tar pit.

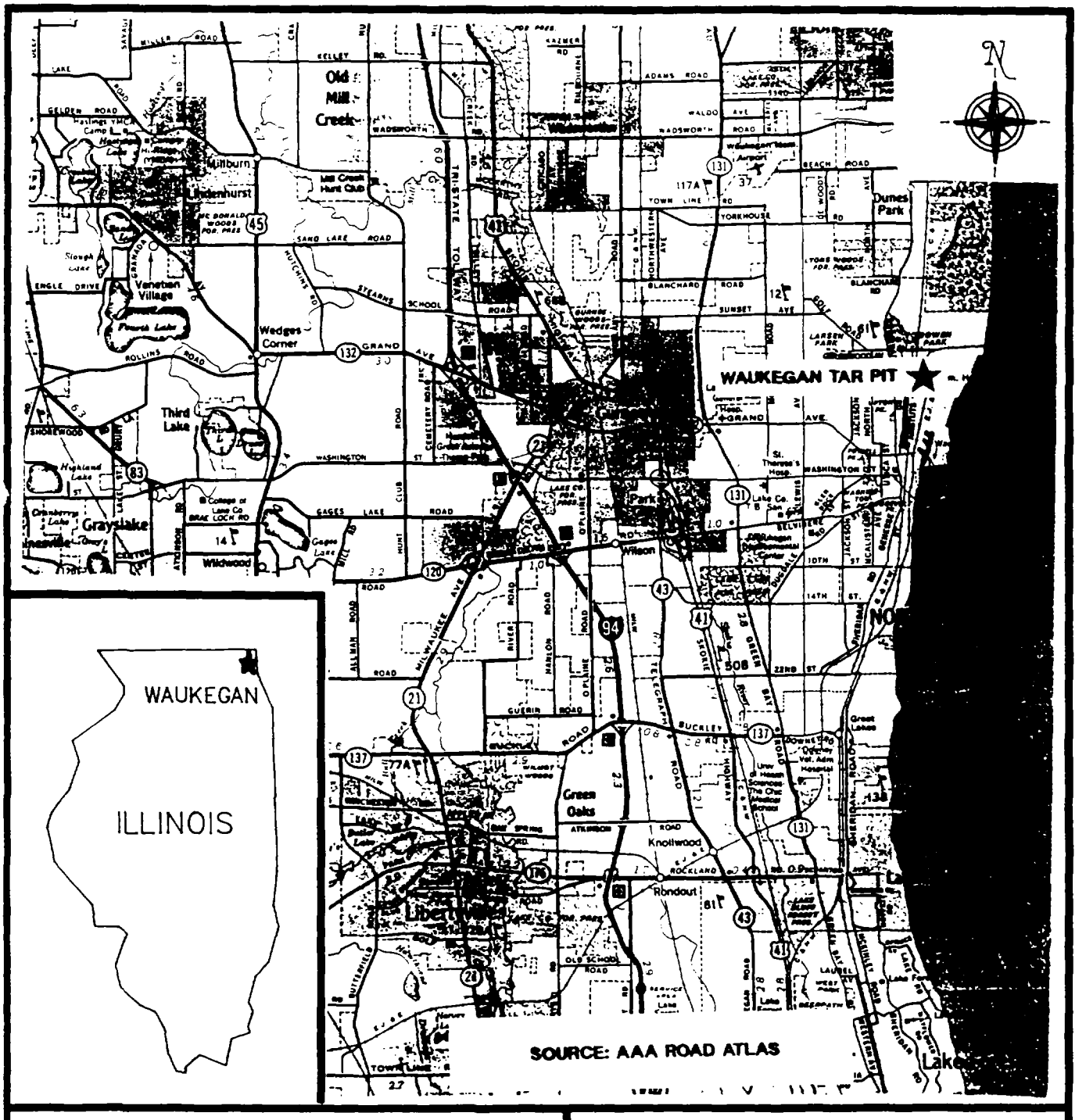

FIGURE 1

SITE LOCATION MAP

WAUKEGAN TAR PIT

WAUKEGAN, ILLINOIS

1 INCH = 2 MILES

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REGION V TECHNICAL ASSISTANCE TEAM

DRAWN BY	DATE	PCS #
MSP	9-28-90	2886
APPROVED BY	DATE	TDD #
A.POTJE	9-28-90	5-9009-02

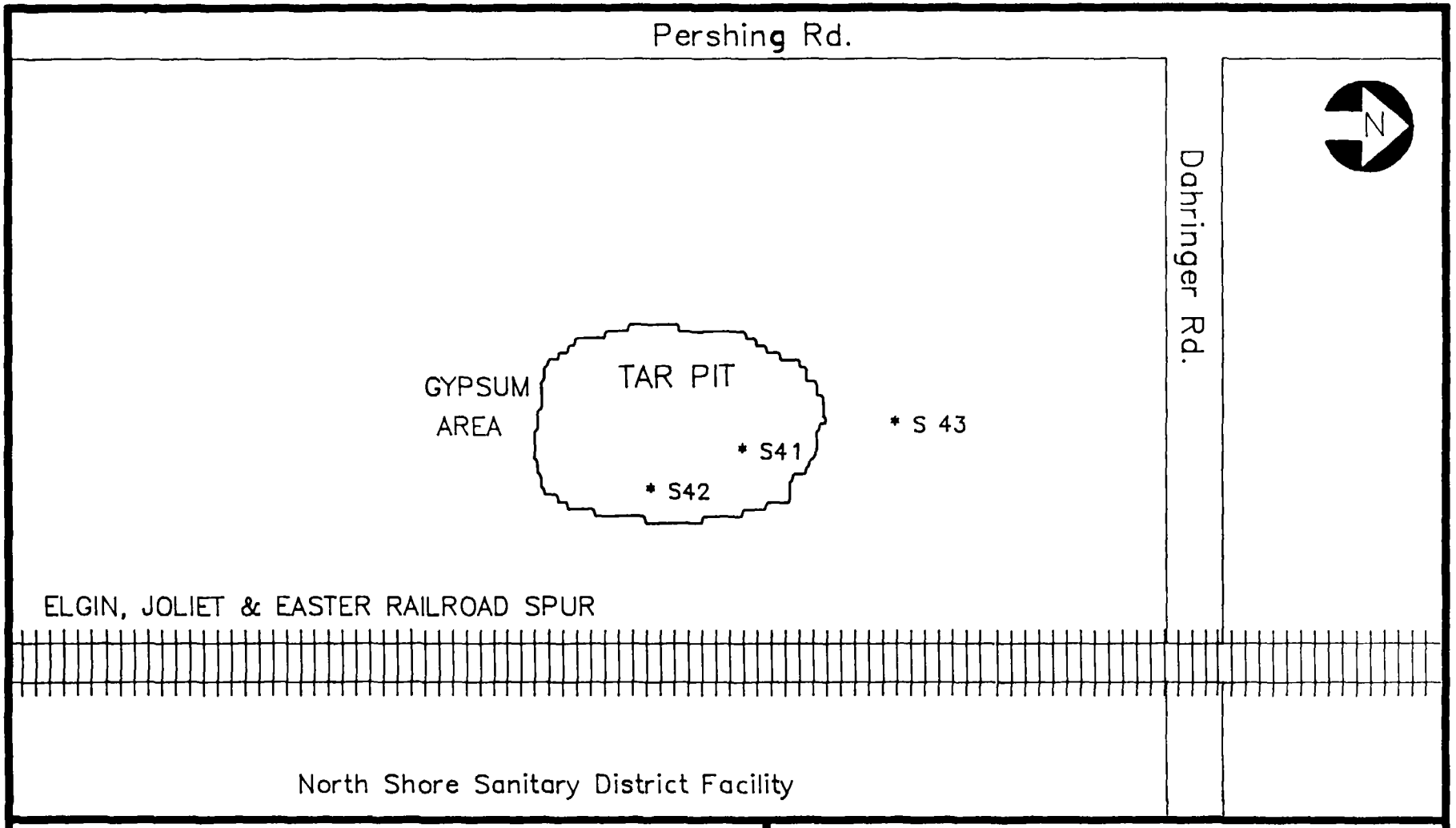

FIGURE 2

SITE MAP WITH SAMPLE LOCATION

WAUKEGAN TAR PIT

WAUKEGAN, ILLINOIS

NOT TO SCALE

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REGION V TECHNICAL ASSISTANCE TEAM

DRAWN BY MSP	DATE 9-28-90	PCS # 2886
APPROVED BY A.POTJE	DATE 9-28-90	TDD # 5-9009-02

White material believed to be gypsum was observed on the south end of the tar pit. According to an employee of E, J & E, the gypsum was put there to stop the tar from migrating further south.

One water and two tar grab samples were collected by TAT. The water sample was collected from the water on top of the tar pit. One of the tar samples was collected from the tar pit sediment, and the other was collected 50 feet north of the tar pit.

The samples were preserved with ice and on September 7, 1990, delivered to EMS Laboratories in Darien, Illinois, and analyzed for polychlorinated biphenyls (PCBs), flash point, Resource Conservation and Recovery Act (RCRA) parameter solvents, and volatile organic compounds (VOCs) under TAT Analytical Services TDD# 5-9009-L02.

4.0 ANALYTICAL RESULTS

Analytical results of the water sample collected above the tar indicated levels of benzene at 69 parts per billion (ppb), toluene at 59 ppb, and xylene at 18 ppb. PCB concentrations were below method detection limit on all of the samples collected.

Analytical results of the tar pit sediment indicated a flash point of 150 degrees Fahrenheit (°F). RCRA solvents detected include: ethyl benzene (230 parts per million [ppm]), xylene (2000 ppm), o-dichlorobenzene (6700 ppm), nitrobenzene (620 ppm), benzene (530 ppm), and toluene (810 ppm).

Analytical results of the tar seep sample collected north of the tar pit indicated a flash point of 72°F. RCRA solvents detected include: ethyl benzene (710 ppm), xylene (660 ppm), cyclohexanone (80 ppm), o-dichlorobenzene (210 ppm), benzene (180 ppm), and toluene (380 ppm). A summary of analytical results is presented in Table 1.

5.0 THREATS

Based on the TAT investigation and sampling action, the conditions observed at the Waukegan Harbor Tar Pit site to be considered in determining the appropriateness of a removal action as outlined in Section 300.415 paragraph (b)(2) of the National Contingency Plan (NCP) include:

- Actual or potential exposure to hazardous substances, to nearby populations, animals, or food chain; and
- Threat of fire or explosion.

TABLE 1
ANALYTICAL RESULTS OF TAT SAMPLING *
WAUKEGAN HARBOR TAR PIT
WAUKEGAN, ILLINOIS

SEPTEMBER 6, 1990

Parameter	Tar Pit Water (S41)	Tar Pit Sediment (S42)	Tar Seep North of Tar Pit (S43)
Flash point (°F)	NA	150	72
Ethyl benzene (ppm)	ND	230	710
Xylene (ppm)	.018	2000	660
Cyclohexanone (ppm)	NA	ND	80
O-dichlorobenzene (ppm)	NA	6700	210
Nitrobenzene (ppm)	NA	620	ND
Benzene (ppm)	.069	530	180
Toluene (ppm)	.059	810	380
PCBs	ND	ND	ND

* Samples analyzed by EMS Laboratories, Inc., in Darien, IL under TAT Analytical Services TDD # 5-9009-L02

NA = Parameter not tested for in this sample.

ND = Not detected at method detection limit.

5.1 Actual or Potential Exposure to Hazardous Substances, by Nearby Populations, Animals, or Food Chain.

Access to the Tar Pit was unrestricted at the time of the TAT inspection. Several birds and animals have reportedly become trapped in the tar pit. Neighboring residents and more wildlife could easily become trapped in the tar if they wandered into the water-covered tar pit unaware of the potential danger.

5.2 Threat of Fire or Explosion.

TAT analytical results documented that the tar had a flash point as low as 72^0F. This is well under the 140^0F limit established by 40 CFR Part 261 as the definition of a RCRA characteristic waste. Reports of a tar fire at the Tar Pit in 1988 also document a threat of fire.

5.3 Specific Chemical Threats

The specific chemical contaminants as documented by TAT analytical results are as follows: ethyl benzene, xylene, cyclohexanone, o-dichlorobenzene, nitrobenzene, benzene, toluene. Exposure to ethyl benzene can cause kidney, liver, chronic respiratory, and skin diseases, and will also irritate the eyes and mucous membranes. Exposure to xylene vapors may cause irritation to eyes, nose, and throat, and acute exposure may cause depression and minor reversible effects on the kidneys and liver. At high concentrations xylene vapor may cause dizziness, nausea, and abdominal pain. Human exposure to o-dinitrobenzene is reported to cause hemolytic anemia and liver necrosis; exposure to high concentrations causes irritation of the eyes and nose, and liver and kidney damage. Nitrobenzene affects the central nervous system producing fatigue, headache, vertigo, vomiting, and general weakness. Acute exposure to benzene results in central nervous system depression, headaches, dizziness, nausea, and convulsions. Exposure to high concentrations of benzene results in coma and death. Benzene is considered a carcinogenic by the U.S. EPA. Toluene may cause irritation of the eyes, respiratory tract, and skin. Exposure to high concentrations of toluene results in central nervous system depression, and coma.

6.0 EXTENT-OF-CONTAMINATION STUDY

As requested by OSC O'Mara, TAT has prepared a cost estimate for conducting an extent of contamination (EOC) study around the tar pit. The purpose of the EOC study would be to determine the volume of soil surrounding the pit that contains VOCs and may require removal. TAT estimates that a crew consisting of a foreman, technician, equipment operator, and hydrologist will work six 10-hour days. A field clerk will work three 8-hour days tracking costs in the office. The cost estimate is based on O.H. Materials rates.

The cost estimate allows for the drilling of 27 sample borings, which will each require 90 minutes to complete. TAT assumed that the crew will use a drill rig to obtain samples from several depths. TAT also assumed that samples containing visible tar will contain enough VOCs to be hazardous, and therefore, only samples without tar will require analysis. The cost estimate allows for base/neutral, VOC, and flash point analyses for ten samples.

The EOC study will cost an estimated $ 35,620, which includes the cost of TAT and U.S. EPA oversight.

ATTACHMENT A

SITE PHOTOGRAPHS

PHOTO: 1.
SITE NAME: Waukegan Tar Pit - Waukegan, Illinois
DESCRIPTION: West view of tar pit
DATE/TIME: 9-6-90/1027
PHOTOGRAPHER: M. Piro
FILM: 35MM, ISO 200

PHOTO: 2.
SITE NAME: Waukegan Tar Pit - Waukegan, Illinois
DESCRIPTION: View of tar seep
DATE/TIME: 9-6-90/1029
PHOTOGRAPHER: M. Piro
FILM: 35MM, ISO 200

PHOTO: 3.
SITE NAME: Waukegan Tar Pit - Waukegan, Illinois
DESCRIPTION: West view of tar pit and burnt telephone pole
DATE/TIME: 9-6-90/1030
PHOTOGRAPHER: M. Piro
FILM: 35MM, ISO 200

PHOTO: 4.
SITE NAME: Waukegan Tar Pit - Waukegan, Illinois
DESCRIPTION: View of gypsum on south side of tar pit
DATE/TIME: 9-6-90/1037
PHOTOGRAPHER: M. Piro
FILM: 35MM, ISO 200

ATTACHMENT 3

COST ESTIMATE FOR EXTENT OF CONTAMINATION STUDY

Redacted-not relevant to the selection of removal action.